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TITLE: *Applications of Reflectance Transformation Imaging (RTI) in a Fine Arts Museum: Examination, Documentation, and Beyond*

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ABSTRACT

In 2006, the Worcester Art Museum collaborated with Cultural Heritage Imaging (CHI) to develop reflectance transformation imaging (RTI) as a viable examination and documentation method for fine art collections. This included designing an RTI dome and establishing a digital workflow protocol for acquiring, processing, and storing RTI files. As the first American art museum to integrate RTI into conservation practice, the Worcester/CHI collaborators presented their achievement at the 2009 Annual Meeting of the American Institute for Conservation held in Los Angeles. Since then, the Museum has documented the surface topologies of a wide variety of art materials, with a particular interest in finding new applications for RTI. This paper presents a brief sampling of examples of RTI use, with an emphasis on two unique examples in which the application of RTI went beyond the sole purpose of documentation to enhance significantly our understanding of the artistic process.

The first example involves a research project that investigated a group of Greek red-figure vases and vase fragments in the collection of the Harvard Art Museums and the Worcester Art Museum. The project, which is a continuation of research presented by Worcester at the 2010 MRS conference in Boston, utilized RTI in conjunction with laser scanning confocal microscopy to help resolve a long-standing debate among scholars regarding the technique used to create the characteristic 'relief lines' of the surface decoration. This research also involved mock-ups for comparison to better understand the ancient technology and ultimately led to the conclusion that the relief lines were not produced by an extruded method as previously postulated, but with a brush made of two or very few hairs, termed *linierhaar* as first proposed by Gérard Seiterle in 1976. Two distinct types of relief lines were observed: the *laid line* (proposed by Seiterle) which has a characteristic ridged profile, and the *pulled line* (proposed in a previous paper by the authors) which has a furrowed profile. Additionally, it was determined that the relief line used to outline figures was applied prior to the contour line. These findings are primarily based on surface topography evidence visible using RTI.

The second example involves the discovery of an original inscription on an early-career portrait by the Flemish Baroque master Anthony Van Dyck (1599-1641). The portrait, which belongs to the Royal Museum of Fine Arts in Antwerp, is of an unknown man and is on long-term loan to

the Worcester Art Museum. Obvious compositional changes to the sitter's collar and background prompted x-radiography and infrared reflectography examinations to evaluate the extent of changes throughout. Neither of these methods revealed the underlying inscription; however, during visual examination at Worcester's conservation department, a faint feature was noticed in the paint surface topography that suggested the presence of the underlying inscription. The inscription likely was painted over at the same time modifications were made to the sitter's costume. Subsequent application of RTI enabled conservators to image the entirety of the previously unknown inscription, which now provides scholars with a firm date for the artist's original composition and an example of how RTI can yield results where more established imaging techniques such as x-radiography and infrared reflectography do not.

Presenter's Biography

Philip Klausmeyer earned art history and studio art degrees from the University of Massachusetts, Amherst, and an MS from the Winterthur/University of Delaware Program in Art Conservation, specializing in paintings. In addition to fifteen years at the Worcester Art Museum, his conservation work includes time at the Strauss Center for Conservation, Harvard University and the Museum of American Art at the Pennsylvania Academy of Fine Arts, Philadelphia. In 2009, he received a PhD from Clark University where he focused on applications of immunological methods in the analysis of art materials. He is currently Worcester's conservation scientist and associate paintings conservator.

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